

graphs; Janssen failed; internal contact uncertain several seconds; complete disk of *Venus* seen twelve minutes before; 120 micrometer measures.

Telegram by Reuter's Telegraph.

The Netherlands Expedition to observe the transit of *Venus* at Réunion, only half successful on account of obscure sky.

### *Computations in regard to the Transit of Venus.*

By J. R. Hind, Esq.

(Extract from a Letter to the President.)

The only observed time of either internal contact of *Venus* pretending to any accuracy which we have yet seen here, is that published in the *Times* of (December 10) as having been observed at Alexandria.

I have had the curiosity to compare this observation with the result of accurate computations; first, with Le Verrier's elements of Sun and Planet, and the semi-diameters recommended by him at p. 40 of the *Introduction to Tables of Venus*, and secondly with Carlini's Sun and Lindenau's *Venus*, and the old *Nautical Almanac* values for semi-diameters.

The observed time of second internal contact at Alexandria to which I have referred is

Dec. 8 at 20<sup>h</sup> 5<sup>m</sup> 40<sup>s</sup>.1 Local Mean Time.

With Le Verrier's elements, I find it

Dec. 8 at 20<sup>h</sup> 5<sup>m</sup> 39<sup>s</sup>

Correction to computed time = + 1<sup>s</sup>

(so very small a difference is no doubt to a certain extent fortuitous.)

With Carlini's and Lindenau's elements, I find it

Dec. 8 at 19<sup>h</sup> 50<sup>m</sup> 46<sup>s</sup>

Correction to computed time = + 14<sup>m</sup> 54<sup>s</sup>.

This comparison shows to how great extent Le Verrier's theories of Sun and Planet have benefited us in respect to this year's transit of *Venus*.

As you may probably be in possession to-day of observed times at one of the normal Egyptian stations, I add my results for Cairo and Thebes, deduced, with every care, from Le Verrier's tables and semi-diameters. The original calculations for Alexandria also accompany this for your satisfaction.

I recently made a close examination of the Transits of 1761 and 1769, after determining elements from Le Verrier's Tables. As was to be expected, I arrived at very similar conclusions to those he has obtained in his work for the *Tables of Venus*.

With regard to semi-diameters, I now think it will probably be found that we should have made closer predictions of the times of contact by adopting the values to which I have alluded. As Le Verrier remarked to me, "the two must go together," and up to the last transit we had no means of ensuring this, except by adopting the diameters deduced from the transits of last century.

With Le Verrier's values for semi-diameters (*Introduction to Tables of Venus*, p. 40) :—

|                                                          |                                                       |        |                                                |             |
|----------------------------------------------------------|-------------------------------------------------------|--------|------------------------------------------------|-------------|
| Cairo.                                                   | 2nd Internal Contact                                  | Dec. 8 | 20 <sup>h</sup> 11 <sup>m</sup> 8 <sup>s</sup> | Local M.T.  |
|                                                          | 2 <sup>h</sup> 5 <sup>m</sup> 1 <sup>s</sup> .4 E.    |        | 344 <sup>o</sup> .7                            | N. to E.    |
|                                                          | + 30 <sup>o</sup> 2' 4"                               |        | 32 <sup>o</sup> .3                             | Vert. to E. |
| Thebes.                                                  | 2nd Internal Contact                                  | Dec. 8 | 20 <sup>h</sup> 16 <sup>m</sup> 0 <sup>s</sup> | Local M.T.  |
| (Ruins of Luxor)                                         |                                                       |        |                                                |             |
|                                                          | 2 <sup>h</sup> 10 <sup>m</sup> 21 <sup>s</sup> .1 E.  |        | 344 <sup>o</sup> .8                            | N. to E.    |
|                                                          | + 25 <sup>o</sup> 41' 57"                             |        | 35 <sup>o</sup> .3                             | Vert. to E. |
| Alexandria.                                              | 2nd Internal Contact                                  | Dec. 8 | 20 <sup>h</sup> 5 <sup>m</sup> 39 <sup>s</sup> | Local M.T.  |
|                                                          | 1 <sup>h</sup> 59 <sup>m</sup> 25 <sup>s</sup> .65 E. |        | 344 <sup>o</sup> .7                            | N. to E.    |
|                                                          | + 31 <sup>o</sup> 11' 47"                             |        | 32 <sup>o</sup> .1                             | Vert. to E. |
| 3 Verulam Buildings, Gray's Inn, W.C.,<br>1874, Dec. 11. |                                                       |        |                                                |             |

Extract from a Letter from R. J. Ellery, Esq., F.R.S. to  
Rev. Dr. T. R. Robinson, F.R.S.

We are now in the midst of a systematic series of observations of Sir John Herschel's figured Nebulæ, many of which appear to have greatly changed since the Cape drawings, not only in shape and character, but also apparently in position with respect to some of the stars Sir John figured with the Nebulæ. As soon as I have got over the present pressure, I will send you a list of the most remarkable differences that have been observed. . . . We have still got Coggia's Comet in view ; and Mr. Turner made a sketch from it last night with the great Melbourne telescope—it is too faint now for smaller instruments.

For the transit of Venus I have decided to employ the great Melbourne telescope for photography at the primary focus. I proposed to have a disk (with radial slits) 19" diameter rotating